UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,506	07/06/2001	Alexei Nikolaevich Kotlikov	1202.019US1	4187

7590 05/06/2004	EXAMINER
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2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/900,506	Applicant(s) KOTLIKOV ET AL.
	Examiner Dennis Rosario-Vasquez	Art Unit 2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>07/06/01</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-27</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-27</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>07/06/01</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>6</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-3,5-9,11-13,17,19-24,26 and 27 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Edgar (US Patent 6,075,590 A) in view of Edgar (US Patent

6,075,590 A).

Regarding claim 1, Edgar teaches a method (fig. 7) of removing an object (fig. 7,

a bold line depicted in numeral 706 or fig. 5, num. 506) from a digital image (fig. 7, num

702) comprising,

a)   displaying a digital image (fig. 7, num. 702) derived from digital image

data (fig. 1, num. 112 is a scanner with analog to digital conversion of an image 102 at

col. 1, lines 29-31.) ,

b)   overlaying a virtual frame (fig. 7, num. 706) to surround a sub-region (A

region of hair from numeral 702) of the digital image (fig. 7, num. 702) that contains at

least a part of the object (a horizontal bold line of figure 7, num. 706) and a potion of the

digital image that does not comprise the object (a plurality of lighter vertical lines of

numeral 706),

    c)   identifying (The defect is identified by using a transform "T" as shown in figure 7) the defect (fig. 7, num. 706 has a bold horizontal line as the defect) of object to be removed by apportioning (The virtual frame is divided into visible and non-visible areas as shown in figure 7, num. 710 as the visible area and num. 712 as the non-visible area from col. 6, line 63 to col. 7, line 2) the virtual frame into object (fig. 7, num. 710) and non-object regions (fig. 7, num. 712),

    d)   modifying the digital data to amend data (Fig. 7, num. 744 subtracts or amends image data from scanned images 702 and 704) relating to object regions (The transform "T" of figure 7 identifies regions or blobs as shown in figure 7, num. 710 and 710 of object and non-object regions) so that the data more closely resembles data of non-object regions (Using figure 7, an inverse transform produces an image 758 or 760 without the object or bold horizontal line defect present.),

Edgar does not teach the combination of noise as required of claim 1, but in another embodiment, fig. 12, Edgar does include noise factors to produce a defect free image at col. 12, lines 59-61.

    e)   the step of modifying the digital data (fig. 12, num. 1202 and 1204) including combining noise (fig. 1220 and 1224) into the digital data of the object (Bold horizontal line of figure 12, num. 1208).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Edgar's embodiment of figure 7 with the embodiment of figure 12, num. 1220 and 1224, because blurring 1220 and 1224 "reduces artifacts in the calculation of gain caused by irregularities and noise in the image (col. 12, line 59-61)."

Regarding claim 2, Edgar teaches the method of claim 1 wherein the digital image data is provided in a format that describes a perceptual color space (Edgar uses a film that has yellow, magenta, and cyan dyes at col. 2, line 23,24)

Regarding claim 3, Edgar teaches the method of claim 2 wherein the perceptual color space is selected from perceptual color spaces having a lightness component (Edgar teaches that the scanner can obtain images that contain all light and dark shades at col. 1, lines 49,50.)

Regarding claim 5, Edgar teaches the method of claim 2 wherein the object is a defect (Fig. 7, a bold line depicted in numeral 706 is the defect).

Regarding claim 6, Edgar teaches the method of claim 5 wherein the defect (fig. 5, num. 506) is digital data (Fig. 5, num. 510 is an analog to digital converter) of a defect in an original image (fig. 5, num. 502 and 504).

Regarding claim 7, Edgar teaches the method of claim 1 wherein the noise is estimated (fig. 12, num. 1228: "ESTIMATE X") from image data in the vicinity (The noise is estimated within a 9X9 blurring window for a subsequent correspondence step of corresponding pixels for estimation x at col.12, lines 61-63 and 65-67) of the object (Fig. 12, num. 1226 has a hatched line figure as the object).

Regarding claim 8, Edgar teaches the method of claim 7 wherein the noise is estimated by a process comprising sampling image data from a non-object area (Edgar teaches that an image's object and non-object areas or whole image can be sampled using brightness, which is represented as a pixel (col. 2, lines 14-16) for later processing of noise).

Claim 9 was addressed in claims 7 and 8.

Claim 11 was addressed in claim 4.

Regarding claim 12, Edgar teaches the method of claim 1 wherein object regions and non-object regions are designated by application of a threshold value (Edgar uses the infrared red spectrum to differentiate between infrared object and visible non-object regions) for at least one component (Infrared component) of the digital image data for a pixel.

Claim 13 was addressed in claim 12.

Regarding claim 17 Edgar teaches the method of claim 1 wherein the noise is random noise (Edgar teaches reducing artifacts caused by irregularities and noise at col. 12, lines 59-61.).

Claim 19 was addressed in claim 13.

Claims 20 and 21 were addressed in claim 15.

Claim 22 was addressed in claim 16.

Claim 23 was addressed in claim 17.

Regarding claims 24,26 and 27, Edgar teaches a computer (fig. 1, num. 122) and software ("scan software" at col. 6, line 62) in the memory of the computer that can execute the process of claims 1,11 and 19, respectively.

3.   Claims 4,10,18, and 25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Edgar (US Patent 6,075,590 A) in view of Ishida (US Patent

5,425,134 A).

Regarding claim 4, Edgar does not teach the selection of CIE L*u*v and CIE

L*a*b color spaces; however, using figure 2, Edgar does suggest using primary color

R,G,B, and infrared filters (num. 226,230,250) for selectively obtaining respectively

yellow, magneta, cyan color dyes and defects from a color film num. 206 that is inputted

to a A/D scanner 208 for later display on a kiosk (col. 1, lines 60-64 and col. 2, lines 20-

27,64,65).

However, Ishida, in the field of endeavor of color printing, teaches the use of CIE

L*u*v or CIE L*a*b color spaces provides a plurality of sets of the amounts of print color

materials of cyan, magenta, and yellow (CMY) at col. 3, lines 40-44.

It would have been obvious at the time the invention was made to one of ordinary

skill in the art to modify the CMY film of Edgar with the color spaces that provide CMY of

Ishida, because the color spaces of Ishida are "independent of the characteristics of an

output unit" such as a kiosk as taught by Edgar. Therefore the characteristics of a

computer kiosk will not affect the display of an image due to the color space of Ishida.

Claim 10 was addressed in claims 7 and 8.

Claim 18 was addressed in claim 10.

Regarding claims 25, Edgar teaches a computer (fig. 1, num. 122) and software

("scan software" at col. 6, line 62) in the memory of the computer that can execute the

process of claim 4.

4.   Claims 14, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edgar (US Patent 6,075,590) in view of Murakami (US Patent 5,982,946 A).

Regarding claim 15, Edgar teaches the method of claim 1 wherein the modifying of the digital data to amend data relating to object regions so that the data more closely resembles data of non-object regions includes a linear combination (Edgar teaches that the upper right minus symbol of figure 12 is a linear combination of two images for defect correction at col. 3, lines 39,40).

Edgar does not teach a linear combination of an interpolation of non-defect data and of original image data.

However, Murakami, in the field of endeavor of image defect correction, does teach a linear combination of an interpolation ("linear interpolation") of non-defect data ("normal pixels") and of original image ("defective pixel") data at col. 9, lines 36-42.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Edgar's linear combination function with Murakami's teaching of linear interpolation, because Murakami's linear interpolation "provides a greater effect of suppressing incongruity with surrounding normal pixels and avoiding texture deterioration in the digital image (Murakami, col. 9, lines 40-42)."

Claims 14 and 16 were addressed in claim 15.

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lawton et al. (US Patent 6,160,923) is pertinent as teaching a method of removing dust and spots with a user interface at figure 2A and 2B.
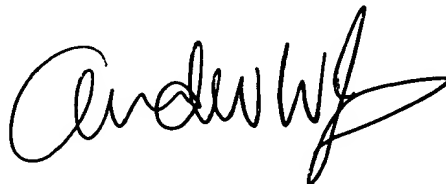
Morimoto (US Patent 6,125,213) is pertinent as teaching a method (fig. 3, label "Trash area interpolation processing") of using a threshold of pixels (fig. 7A, numerals S705 and S706) for a specific shape (fig. 7A, num. S702) that is interpolated.

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario-Vasquez whose telephone number is 703-305-5431. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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